Ripik.AI

We transform how people operate factories

Glimpse into Ripik Optimus - patented platform for production scheduling for pharma manufacturing

Introduction to Ripik

Ripik team	Trusted by market leaders	Core IP and world class tech

Pedigreed education + **Top notch professional experience** + **Decade on the factory floor**

80%+ of Ripik team comprises of toppers from **IIT/IIM/BITS** and other **leading educational institutions** of India

Founding team comprising of **Ex-McKinsey** Jr Partner, **15 years +** cumulative experience in **McKinsey** with **Tech team** comprising of people from **IBM, Google, AWS**

20+ AI-ML transformations in **Pharma and industrial sector across 10+ years**

Understanding of **shop floor reality, and what it takes to change**

20+ Patents, copyrights and industry certifications from

SUN PHARMA

WOCKHARDT

Piramal

Ripik.AI

AICPA SOC · GDPR · ISO 9001:2015 CERTIFIED COMPANY · ISO 27001:2013 CERTIFIED COMPANY · NASSCOM® · FICCI · CII Confederation of Indian Industry · ICC Indian Chemical Council

Production scheduling in pharma manufacturing is a big unresolved pain point

In any Pharma manufacturing set up, production scheduling is a hugely complicated problem

because of

Multitude of combinations of recipes and constraints, **dynamic availability** of raw materials, machines and manpower amongst others

Although all pharma companies use end-to-end advanced planning softwares (APMs)

but

the **off-the-shelf planning management softwares** are **not able to handle as many constraints** and complexity and hence
Last mile Production scheduling continues to be done **manually** based on experience based heuristics

We have built a unique patented machine learning based solver tailored to the Pharma manufacturing industry

such that

All constraints are satisfied, the tool is very **usable on the ground level** and **delivers improvement on throughput, inventory and manufacturing cost**

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Deployment of Ripik Optimus is one of the best business decisions you can make

More optimal plan as Ripik optimus can check for **millions of configurations**

Iterations on schedules in minutes and not days

No person dependency

Ripik optimus leads to..

Key business benefits from deploying Ripik Optimus

↑ Production **Volume improves by 5-10%**

↑ Improvement in **manpower productivity**

↓ **Inventory reduction** by 5-10%

↓ **Working capital reduction** by 10%

$1-2 Mn per annum

Recurring benefits per site is **$1-2 Mn per annum even in a conservative scenario**

Usual pain points for the stakeholders in production scheduling

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Planning team

- Potentially over a **million schedules possible** and very **difficult to identify the optimum** schedule
- **Frequent breakdowns, raw material delays, changes in demand** hence need a tool to rapidly **generate a corrected production plan**
- **Large number of constraints** on cross-block movement, recipes, batch sizes etc need to be handled

Marketing / Sales

- Need **visibility on production schedules** to provide **better commitment to the market**
- Need **faster iterations on production planning** to better **capture opportunities** arising in the market such as sudden high demand of a particular SKU
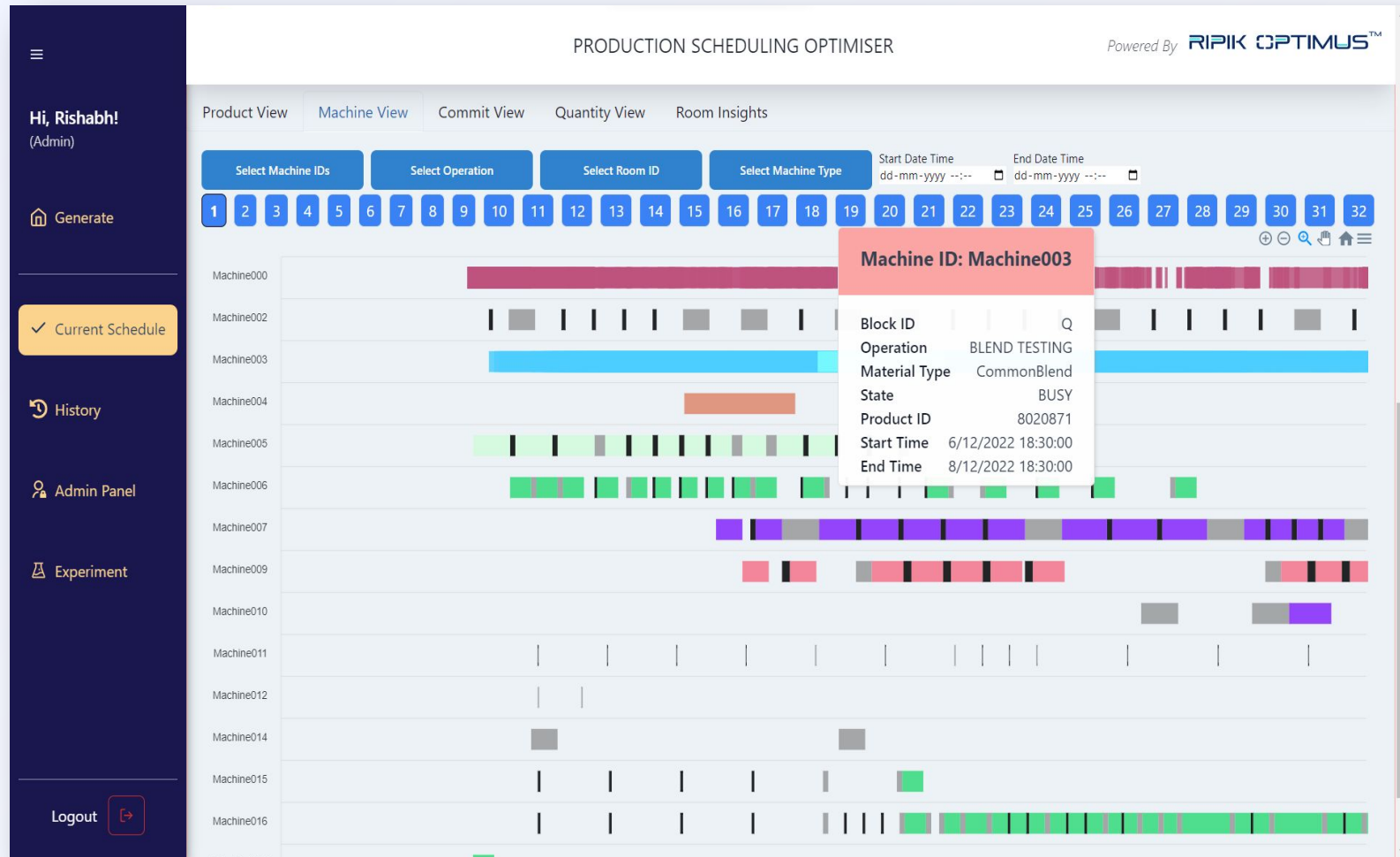
Production team

- Need a tool that provides **granular minute-by-minute plan for each equipment and room**. The plan must be **easily understandable** and a **single version of the truth**
- Need a tool capable of **handling any changes in plant** such as breakdowns, preventive maintenance

Leadership team

- **Maximize Gross Contribution/EBITDA/cash flow for the month** ensuring high utilization of plant network
- **Smart insights on plant metrics** giving ability to take **medium-to-long term strategic decisions** to improve performance

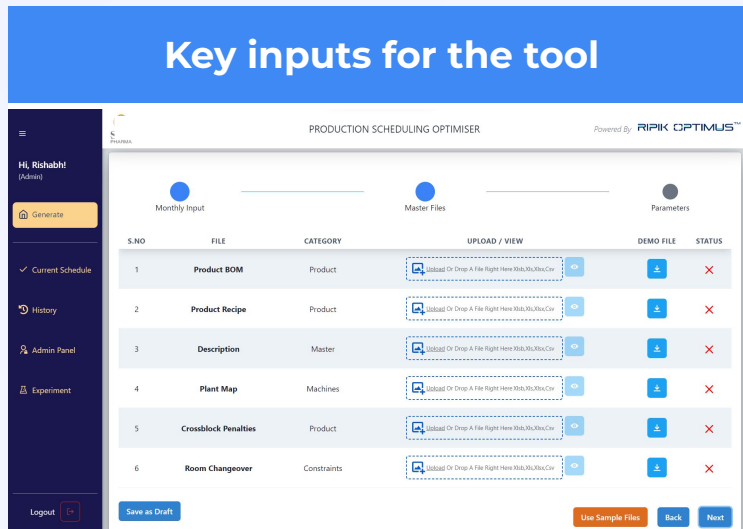# Ripik Optimus for pharma production scheduling solves all the pain points

PRODUCTION SCHEDULING OPTIMISER

Powered By RIPIK OPTIMUS™

Hi, Rishabh!
(Admin)

- Generate
- ✓ Current Schedule
- History
- Admin Panel
- Experiment

Logout

Product View · Machine View · Commit View · Quantity View · Room Insights

Select Machine IDs · Select Operation · Select Room ID · Select Machine Type

Start Date Time: dd-mm-yyyy --:--
End Date Time: dd-mm-yyyy --:--

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

Machine ID: Machine003

Block ID	Q
Operation	BLEND TESTING
Material Type	CommonBlend
State	BUSY
Product ID	8020871
Start Time	6/12/2022 18:30:00
End Time	8/12/2022 18:30:00

Machine000, Machine002, Machine003, Machine004, Machine005, Machine006, Machine007, Machine009, Machine010, Machine011, Machine012, Machine014, Machine015, Machine016

- ❏ Ripik Optimus is a one-of-its-kind **Machine Learning based solver** that generates the most optimal production plan to **maximize GC margins** for the month

- ❏ The solver **handles all possible constraints** generating a schedule that is feasible and can be executed in the plant

- ❏ The schedule can be **generated in minutes** providing the team flexibility to iterate faster

- ❏ The schedule is provided in a **user-friendly interface** with **provision to extract and share** in the form of Excel files

Ripik Optimus captures all Pharma manufacturing nuances
connecting to any ERP system/ files for input and providing output as required by plant team
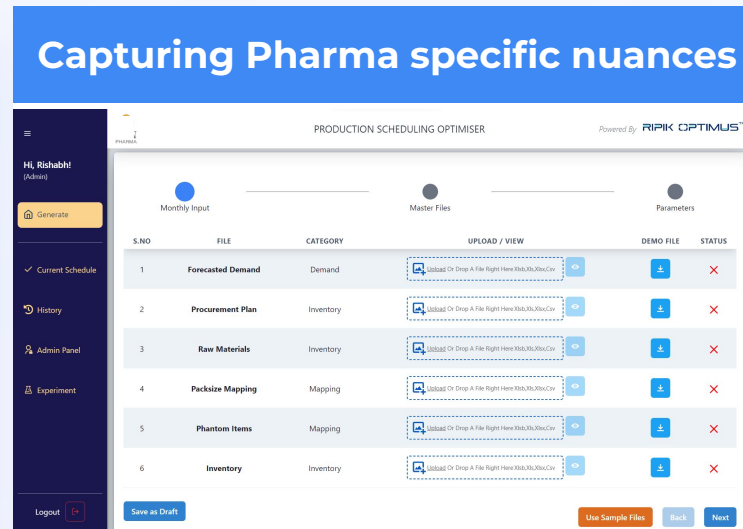

Key inputs for the tool

Ripik Optimus can **link with any ERP system/ files** to fetch:

I. Product BOMs and Process Recipes
II. RM, PM, SFG, and WIP inventory
III. Plant equipment map with different Changeover times for each equipment
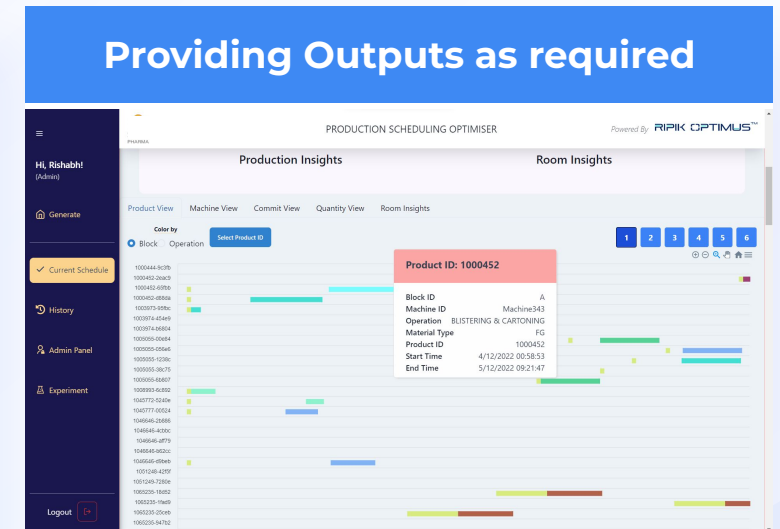IV. Procurement plan and any other input

Capturing Pharma specific nuances

Ripik Optimus is **customized for Pharma plants** capturing **nuances of:**

I. Multiple batch sizes
II. Phantom item list
III. Assigning Cross-block movement penalty
IV. Printed vs. Virgin packing material
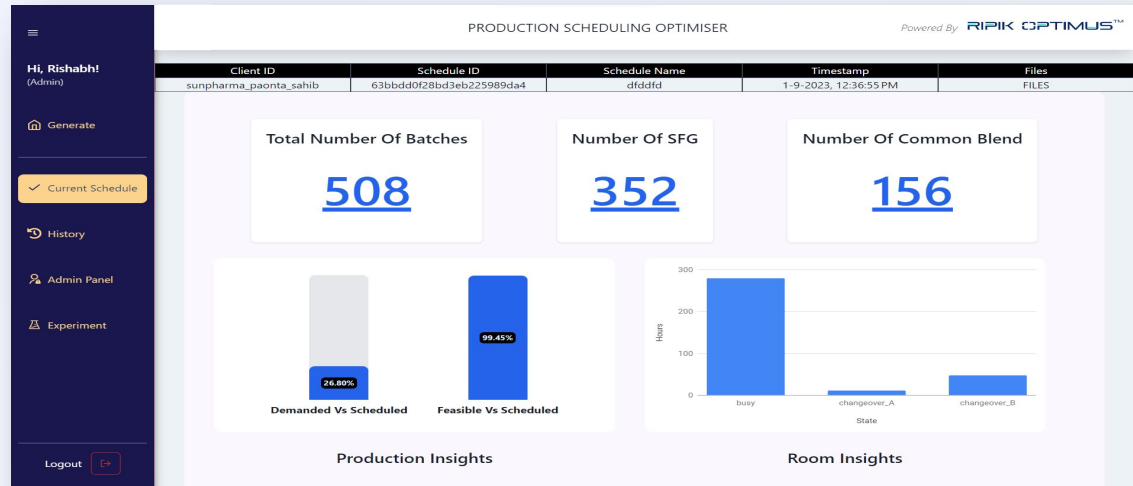
Providing Outputs as required

Ripik Optimus provides a feasible product-wise and machine-wise **minute-by-minute production plan**
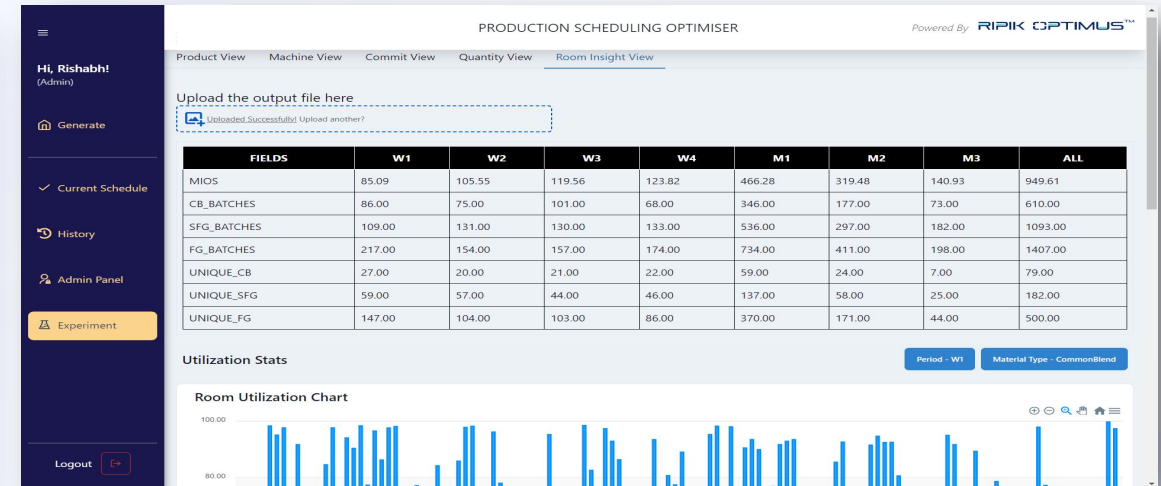
The production plan can be seen **block-wise and room-wise**, with ability to **extract in excel file for easy sharing** with Block and Room in-charges

Ripik Optimus further provides smart insights
such as room-wise and equipment-wise utilization to help in medium to long term strategic planning

- **Details of all batches manufactured** across Common Blend, SFG, and FG

- Identify **raw materials that are bottlenecks for operations** to improve sourcing strategy

- **Identify common blends, SFG** that have **maximum number of batches** in order to take strategic **decision on increasing batch size**

- **Details on room-wise and equipment-wise utilization** charts to identify bottlenecks

- Identify **equipment that are bottlenecks** to plan medium term strategic expansion

- **Identify rooms that over-utilized** to strategically **reduce equipment in the room**/ creation of micro-rooms

Testimonials

We are SOC 2 certified

We are GDPR complaint

We are SOC 1 certified

We are ISO 27001 and 9001 certified

" Ripik.AI has a very deep and granular understanding of what and how Artificial intelligence is. They helped my team in creating a production schedule in minutes rather than 5+ days taken earlier "

Plant Head of Leading Pharma

" Ripik.AI's Optimus has helped reduce our planning iterations, creating a feasible plan that incorporates all our constraints. The plan made by Optimus can be directly shared with the production team for execution "

Planning in-charge of Leading Pharma

" Ripik.AI has built a tool that solves all the pain points in the Production planning process. In addition to it, the smart insights tab is extremely useful providing us information to take better decisions "

MD's Office at Leading Pharma

" Ripik.AI has built this tool in a very collaborative manner providing us a solution that not only handles all our constraints but also helped us in correcting several data anomalies in the process "

Centre of Excellence Head

Ripik Optimus tool also provided modules for end-to-end planning management

Area	Module
A1 Raw material	• **Material requirement planning automation** • Filters for **triggers of MRP** e.g., fulfilment of cash flow required for the order • Ensuring all **raw materials are in sync** hence delay/deferral/ preponement of certain orders based on schedule of complimentary raw material • **Compliance check on quantity** • **Automated alerts on delay & trigger of PO** to avoid panic buying
A2 Production planning	• Scheduling of items on machine such that **production is optimized** • **Sweet spot of managing OTIF and changeover times** • **Live tracking of production** such that delays are minimized
A3 Demand forecasting	• AI-ML based **granular demand forecasting** with higher accuracy • **Optimized FG inventory norms** based on demand and lead time variability
A4 Overall	• **End to end dashboard on inventory** • Liquidation of **dead stock by auctions** • **Working capital management**

Ripik Optimus can be deployed and integrated with ERP in 12 weeks

| Data Source Identification and Extraction | Definition of all constraints and deployment of Ripik Optimus tool | Trials initiated, fine-tuning based on user feedback and integration with ERP |

4 Weeks → **4 Weeks** → **4 Weeks**

Identify systems for all types of data required

Extract data from all systems

Digitize data with team wherever required e.g., process recipe

Exhaustively **define all constraints**

Test Ripik Optimus algorithm for building a production schedule

Fine-tune constraints and ML model **based on live trials**

UI fine-tuning based on user feedback

Integration with ERP/ any other required sources of data

Given we have the tool ready, it will take us only 2 months to deliver an automated production plan. Further, it will take us 1 month to integrate with ERP systems